Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of	)	GEN Docket No. 90-314
	)	ET Docket No. 92-100
	)	
Amendment of the Commission's Rules to Establish New Personal Communications Services	)	RM-7140, RM-7175, RM-7617, RM-7618, RM-7760, RM-7782, RM-7860, RM-7977, RM-7978, RM-7979, RM-7980
	)	
	)	PP-35 through PP-40, PP-79 through PP-85

COMMENTS OF THE
UNITED STATES TELEPHONE ASSOCIATION

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deployment of PCS.

In order to ensure that PCS is available to customers in non-metropolitan areas, the Commission should reserve one block of spectrum within each RSA for exchange carriers to provide PCS in their exchange serving areas.

The Commission should provide for five licensed, paired channel sets of 20 MHz for PCS in each serving area. This will support a wide range of PCS services and allow providers sufficient spectrum to offer viable PCS services. USTA supports the Commission's decision to allocate spectrum for unlicensed PCS and recommends one unlicensed, paired, channel set of 20 MHz of spectrum for narrowband applications. The Commission should attempt to identify additional frequencies for such uses. Finally, USTA would propose an allocation of 20 MHz of unlicensed spectrum exclusively for wideband PCS applications.

While a comparative hearing is likely to yield a more qualified applicant, a modified, "post-card" type lottery can be utilized. The Commission should require strict financial and technical qualifications, definite construction commitments and deadlines, short filing windows and significant, yet fair, filing fees.

USTA agrees that non-discriminatory interconnection of PCS

Summary

USTA provides the Commission with a definition of PCS which will recognize PCS as a distinct, competitive service offering which uses microcell, low-power technology to deploy a high-capacity system designed primarily for pedestrian and in-building applications.

Exchange carriers should be eligible to be full and equal providers of PCS in their serving areas. Exchange carriers have the resources and expertise to facilitate the rapid and economical deployment of PCS. Exchange carrier provision of PCS will enhance the value of the public switched telephone network and increase the availability of PCS to the greatest number of customers. PCS could provide an opportunity for exchange carriers to expand and enhance service to non-metropolitan and isolated areas. Exchange carrier provisions of PCS will facilitate the competitive delivery of PCS.

The Commission should not permit an exchange carrier's cellular holdings to affect its ability to obtain a PCS license in its serving area.

The use of MSAs and RSAs as the serving areas for PCS will enable to Commission to meet its stated objectives. Small serving areas would allow a greater number of providers to participate, would require less investment and would speed

with the public switched telephone network, consistent with existing rules, is in the public interest.

All PCS providers should be regulated in an equivalent manner to avoid conferring a competitive advantage on certain providers or creating classes of providers and services. PCS should be provided as a common carrier service.

Common air interface standards to establish interoperability are necessary to enhance the value of PCS. The Commission should insist that established industry bodies develop standards as soon as possible.

In order to reduce potential interference the Commission should establish PCS as a low-power system. In addition, the Commission should require that to be type-accepted, PCS equipment must demonstrate a method of avoiding interference.

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COMMENTS
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The United States Telephone Association (USTA) respectfully submits its comments in the above-referenced proceeding.[1] USTA is the principal trade association of the exchange carrier industry. Its membership provides over 98 percent of the local telephone company-provided access lines in the U. S. These companies, both large and small, have a significant role to play in developing personal communications services (PCS), in integrating PCS with the public switched telephone network in an efficient and transparent manner and in providing PCS to their customers. Some of these companies have been granted experimental licenses to conduct PCS trials.

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[1] Notice of Proposed Rulemaking and Tentative Decision, 7 FCC Rcd ____, released August 14, 1992. (Notice).

I. INTRODUCTION

The Notice appropriately captures the potential impact of PCS on the future of telecommunications. As the Commission observes, certain PCS applications will create new markets, while others will provide competition in established markets.[2] In general, PCS can provide new flexibility and functionality for telecommunications customers. In order to encourage the development of PCS to its full potential, the Commission is seeking to meet the following goals in establishing a regulatory structure for PCS: universality, speed of deployment, diversity of services and competitive delivery. USTA believes that exchange carrier provision of PCS, within the context of the regulatory framework outlined below, will be essential in meeting those goals.

II. SERVICE DEFINITION

Before responding to the Commission's proposals regarding spectrum allocations, licensing issues, regulatory issues and technical standards, it is important to identify specific characteristics of this new family of services which will ensure that their eventual deployment will be in the public interest. Such characteristics should meet the Commission's stated goals by offering real alternatives to current service offerings and significant improvements in telecommunications capabilities. While USTA does not disagree with the Commission's proposed

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[2] Notice at para. 4.

definition,[3] that definition does not distinguish PCS as a new, competitive service offering.

The use of radio technology to deploy a high capacity system for pedestrian or in-building wireless access can be best achieved with a service designed specifically to meet those applications. For example, personal portable radio sets must be small and lightweight. This means that small batteries must be used. The need for a long service time before battery recharging requires low-power consumption. Conversely, high-power applications, such as cellular service, require weight and bulk due to the large batteries necessary to allow complex signal processing and adequate transmission time at a power level high enough to assure adequate coverage.

Permitting high-power vehicular sets to utilize the same spectrum frequency as low-power portable sets would force the acceptance of compromises which would prevent both services from reaching their full potential. Low-power portable sets require separate frequency assignments to realize the level of frequency re-use necessary to provide service to a large number of customers.

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[3] The Commission defines PCS as a family of mobile or portable radio communications services which could provide services to individuals and business, and be integrated with a variety of competing networks. Notice at para. 29.

Low-power limits the effective radio range, which means that more cells will be placed in a serving area, thereby allowing more intensive frequency re-use and providing a high capacity system capable of wireline telephone density. This type of system architecture based on microcells results in higher capacity and increased spectrum efficiency. Use of low-cost, low-power ports in densely-populated areas can serve many more customers than a high-power vehicular system. Of course, systems made up of small coverage areas cannot meet the needs of widely-ranging, rapidly moving vehicles. Conversely, large cells that match the needs of high speed vehicles cannot provide the high capacity of a microcellular system or reliably provide the coverage necessary to support service to low-power portable sets.

Separate frequency bands optimized for high-power/low-power system architectures require two separate allocations. There is a need for separate low-power personal portable radio systems and high-power vehicular mobile radio systems. Dr. Donald C. Cox, Executive Director, Radio Research Department, Bellcore, uses, as an example, audio cassette tape players to describe the coexistence and interplay of the two systems. "Pedestrians often carry and listen to small portable tape players with lightweight headsets...When one of these people enters an automobile, he or she often removes the tape and inserts it into a tape player installed in the automobile...[I]nformation (the tape) is shared among different devices, but the devices are optimized for their

environments and do not share electronics."[4] In the case of personal communications, only the information identifying the user and where the user can be reached needs to be shared among the intelligence elements, according to Dr. Cox. "The information exchange between network intelligence functions can be standardized and coordinated among infrastructure subnetworks owned and operated by different business entities ..."[5] It seems likely that PCS will not only compete with cellular for customers, but that both applications will also complement each other by providing services that the other cannot optimally provide.

The Commission has recognized that a separate allocation for PCS is required and should be applauded for reserving spectrum for the provision of PCS. However, the Commission's service definition for PCS should recognize the distinction between cellular and PCS systems. More important, the Commission should not permit high-power large cell systems. Rather, the Commission should actively encourage the exclusive development and implementation of personal communications that includes separate radio systems optimized to provide voice and basic rate data services to low-power, small, personal, portable sets operating on dedicated frequencies. The Commission should also

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[4] Cox, Personal Communications-A Viewpoint, November 1990 IEEE Communications Magazine 8, 14.

[5] Id. at p. 16.

seek to encourage the development and implementation of interoperable PCS systems to permit customers to use their sets regardless of who the service provider is and to improve the likelihood that customers will receive service at any given location.

Therefore, USTA proposes that the Commission define PCS as a family of telecommunications services which are person-specific rather than location-specific and which: 1) make use of a pocket-sized, tetherless communications device utilizing low power with a common air interface which can be used to originate and receive two-way communications from any location where PCS is offered; 2) allow ubiquitous connectivity with all customers served by the public switched telephone network; 3) include a core set of standardized features which function at any PCS-served location in a uniform manner; and, 4) could utilize a callable number uniquely associated with an individual, regardless of the means of access or the person's geographic location.

Ultimately, the Commission should encourage the development of a PCS offering which would encompass the following characteristics:

- integrated operation with the public switched telephone network;
- widespread availability;
- reasonable price;

- bandwidth and transmission quality suitable for voice and basic rate integrated services digital network (ISDN) data applications;

- ease of use, reliability, privacy and security comparable to wireline local exchange service;

- availability of a broad set of intelligent network features and functions from which a customer can select the functionality to be associated with the service;

- common service functionality which is the same at any PCS-served location for those features and functions that are available at that location; and,

- seamless hand-off between microcells for call origination, termination and continuity at subvehicular speeds.

Through the development of PCS which encompasses such characteristics, the Commission can ensure that limited spectrum resources will be used effectively to permit the optimal level of personal communications which can utilize and enhance the backbone telecommunications infrastructure and benefit a broad range of customers.

III. ELIGIBILITY REQUIREMENTS

Eligibility to provide PCS is of utmost concern to USTA's member companies. As the Commission correctly points out, PCS is likely to be both a complement to and a competitor of local wireline exchange service. Therefore, USTA strongly agrees with the Commission's tentative conclusion that there is a strong case for allowing exchange carriers to provide PCS within their

respective serving areas.[6] It is apparent, as evidenced by their active participation in this docket and their requests for experimental licenses, that exchange carriers of all sizes and in different geographic locations have a legitimate need to provide PCS in their serving areas. The Commission should encourage exchange carrier participation in the provision of PCS and permit exchange carriers to be full and equal providers in order to facilitate the development of cost-effective, high quality and widely-deployed wireless services.

A. Exchange Carrier Provision of PCS Can Provide Unique PCS Capabilities and Service Opportunities for Customers.

PCS should be a natural extension of the exchange carrier networks, providing greater mobility and flexibility to a wide range of customers. PCS can provide exchange carriers with a new opportunity to facilitate and improve service. Since exchange carriers are already organized to provide economical basic telephone service to the general public, they can meet the Commission's goals of universality, speed of deployment, diversity of services and competitive delivery in the provision of PCS. Exchange carrier participation will facilitate the efficient utilization of the resources of the public switched telephone network to support PCS. By adding low-power radio access to the existing exchange carrier networks, the Commission can realize the following benefits:

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[6] Notice at para. 75.

1. Utilization of the Resources and Expertise of Exchange Carriers Will Facilitate the Rapid Availability and Economical Deployment of PCS.

Exchange carriers already serve the markets where PCS will be deployed. Thus, exchange carriers have the financial resources and much of the infrastructure, including the personnel, physical plant, administrative procedures, billing systems, wireline links, intelligent network features and switching capability, already in place to support PCS. Exchange carriers have expertise in the switching, terrestrial and radio transmission and database handling which will be required for PCS. Exchange carriers would be more than just investors in PCS. They are hands-on network operators, committed to the efficient delivery of telecommunications services at reasonable prices. Their long history of public service will facilitate the availability and efficient delivery of PCS to the public.

The testimony of many of the participants in the Commission's en banc hearing on PCS underscored the importance of leveraging existing infrastructures to ensure broad coverage and reduced costs in the implementation of PCS.[7] Mr. John E. DeFeo, President and Chief Executive Officer, U S West NewVector Group Inc. (NewVector), described research conducted by NewVector which confirmed that leveraging an existing infrastructure resulted in

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[7] See, written statements of Craig O. McCaw at p.13, R. Craig Roos at p.14, Donald C. Cox at p.3, Robert D. Cook at p.12 and John E. DeFeo at p.12, En Banc Hearing on Personal Communications Services before the Federal Communications Commission, December 5, 1991.

the lowest service cost points for PCS. He related the difficulties which NewVector and Unitel encountered in providing PCS in the United Kingdom when they were unable to utilize the public switched network:

> Given the cost and complexity of the infra-structure that will be needed to support PCS in the United States, PCS licensees will need to take advantage of existing networks as a major part of their system infrastructure. Today, the cost of capital is so high, and availability so limited, that few if any PCS licensees will find it possible to construct stand-alone unshared support networks and still offer services that respond to customer needs at reasonable prices.[8]

The Commission itself has recognized the relevance of telephone company expertise in providing service. In affirming a separate wireline spectrum allocation for the provision of cellular service, the Commission noted:

> We continue to recognize the expertise of the independent telephone companies in traffic engineering and the establishment of high capacity local switching networks. This expertise is particularly advantageous in cellular systems, because of the need to tie together various transmitters in a cellular system and to distribute and revise frequency arrangements among the various cells in a system. In addition, we consider cellular to be an extension of local exchange service, and expect that wireline carriers will be able to rely on their expertise and knowledge about their individual service areas to more quickly make quality cellular service available to their communities.[9]

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[8] DeFeo at p.12.

[9] An Inquiry Into the Use of the Bands 825-845 MHz and 870-890 MHz for Cellular Communications Systems; and Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems, CC Docket No. 79-318, Memorandum Opinion and Order on Reconsideration, 89 F.C.C. 2d 58, 71 (1982).

The Commission should permit exchange carriers to utilize their existing resources by taking advantage of inherent efficiencies and economies of scope to provide PCS. This certainly should assist in the rapid, widespread and economic deployment of PCS in both metropolitan and non-metropolitan locations.

2. Exchange Carrier Provision of PCS Will Enhance the Value of the Public Switched Network.

Exchange carrier participation in the PCS market can increase utilization of the exchange carrier network infrastructure, thereby increasing its efficiency and utility. Exchange carrier backbone networks must be permitted to evolve in order to take full advantage of advances in technology. This natural evolution benefits all telecommunications customers and providers. With exchange carrier participation, the greatest number of customers will have access to PCS in the shortest amount of time. Any restriction on exchange carrier participation could increase costs for all potential PCS providers, particularly if such providers would be forced to build a new infrastructure to provide PCS.

Integrating PCS with the local exchange networks would permit PCS customers to take advantage of many existing and emerging intelligent network services, thus hastening the actual

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(Reconsideration Order).

deployment and further enhancement of PCS. A PCS infrastructure must be able to locate and validate customers, route calls, bill calls, and interconnect calls among many different networks on a real-time basis. The emerging intelligent capabilities of the exchange carrier networks will be able to benefit all PCS systems by providing an environment that will maximize competitive choices and widen the range of services available to customers.

Exchange carrier participation in PCS will also promote the development of compatible PCS systems which will enable any PCS customer to use a PCS device from any location. With exchange carrier participation in the standards-setting process, this backbone network can support the needs of any PCS provider and facilitate the interoperability of different PCS systems.

3. Exchange Carrier Provision of PCS Will Benefit Exchange Carrier Customers.

Exchange carriers have a long history of providing telecommunications services to their customers at reasonable rates. The regulatory framework adopted for PCS should permit exchange carriers to utilize new radio-based services as well. The Commission recognizes that wireless technology can be an alternative transmission medium used in the provision of local exchange service. Such technologies can complement local exchange services by generating greater efficiencies and lowering costs. Deployment of radio-based technologies could enable exchange carriers to operate more efficiently, thereby providing

savings for current wireline customers. PCS and the public switched network are complimentary.

Niche PCS providers may compete with exchange carriers for existing wireline customers. Exchange carriers must not be disadvantaged in utilizing new technologies to enhance their networks and to deploy the optimal mix of fiber, copper and radio to continue to bring a wide variety of services to their customers. Exchange carriers:

> should have radio in their portfolio of technologies along with copper and fiber for building local loops...[I]t may be the case that radio provides a lower-cost alternative than copper for providing basic telephone service in many locations. If...radio becomes more cost-effective than copper for local loops in some circumstances (say new builds and capacity expansion in existing neighborhoods) denying LECs access to this technology will raise costs to all telephone subscribers by raising the average cost of loop plant.[10]

Exchange carrier provision of PCS would help offset the possible reduction in revenues which may result from customer migration from landline to wireless services. If such revenues are not offset, remaining customers will have to cover all of the fixed costs of providing landline service.

PCS could be utilized as an additional tool to help achieve

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[10] Written statement of Dr. Charles L. Jackson, National Economic Research Associates, before the Federal Communications Commission En Banc Hearing on Personal Communications Services, December 5, 1991, at p. 10.

the Commission's and exchange carriers' existing universal service responsibilities. Exchange carriers must be permitted to develop and utilize PCS technology to meet customer needs, just as they have with cellular, paging, call forwarding, pay phones, voice mail and Basic Exchange Telecommunications Radio Service.

PCS, in particular, could provide an opportunity for exchange carriers to expand and enhance service to non-metropolitan and isolated areas. Exchange carrier provision of PCS is important in such areas, particularly where such services could prove to be beneficial to the economic development of these less-populated sections of the country. Exchange carriers may be the only PCS providers in such areas. For example, wireless systems that can interwork with wireline networks in providing basic telephone and mobility services are being used in developing countries where service demands are increasing, but where there are no resources to update the current infrastructure or where there is no infrastructure at all.[11]

Integration of PCS with the exchange carrier's network will be essential to the deployment of PCS in small, residential and less-populated market areas. Customers in such areas should have the same opportunities to obtain high-quality, affordable PCS as

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[11] Personal Communications Services, Telesis Issue No. 94, Bell-Northern Research, p. 77 (1992).

customers in metropolitan areas.

B. Exchange Carrier Provision of PCS Will Facilitate the Competitive Delivery of PCS.

The Commission states that establishment of PCS is warranted as a way of introducing additional competition to current mobile radio services.[12] Exchange carrier provision of PCS will not impede competition in the PCS market and speculation to the contrary is not sufficient to prevent exchange carrier participation. The regulatory framework proposed in this filing will facilitate the competitive offering of PCS through the licensing of five providers in each serving area and the creation of smaller serving areas than those suggested by the Commission, as will be explained below. Exchange carrier participation in this docket and in PCS trials evidence the fact that they would vigorously deploy PCS in their serving areas to provide expanded and improved service offerings to their customers. As the Commission observed previously, "[i]n the event that cellular should provide a competitive alternative to the landline network sometime in the future it is unrealistic to assume that a wireline carrier would stand idly by and lose business to a competing licensee."[13]

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[12] Notice at para. 26.

[13] Cellular Communications Systems, 89 FCC 2d 58, 68 (1982).

Foreclosing exchange carrier participation in PCS would eliminate experienced and capable competitors in the market and may preclude PCS availability in areas where competition is less likely to develop. Exchange carrier participation, as explained above, will facilitate opportunities for creative and adaptive PCS offerings, thus stimulating demand for these services, and enhancing technological developments. It is far too early in the developmental stages of PCS to conclude that these potential providers must be prohibited from entering the market. In any event, current regulatory safeguards and non-discriminatory interconnection, as will be discussed below, will assuage any concerns regarding exchange carrier provision of PCS in its serving area.

C. An Exchange Carrier's Cellular Holdings Should Not Affect its Eligibility to Obtain a PCS License in its Serving Area.

While recognizing the economies of scope between wireless and wireline telephone services, the Commission suggests that those economies may be realized by exchange carriers through their cellular holdings and not through separate PCS licenses.[14] This implies that an exchange carrier may not be eligible for a PCS license if it holds an interest, either directly or indirectly, in a cellular company. The Commission also proposes to adopt a severe ownership standard under which no party with an ownership interest, direct or indirect, in a cellular license

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[14] Notice at paras. 75-76.

could have an ownership interest, direct or indirect, in a PCS license serving the same geographic area.[15] Such a restriction on entry in the PCS market is unnecessary as it would effectively bar potential competitors and innovators in that market. USTA strongly urges the Commission not to adopt such a restriction.

Many exchange carriers do not control or operate cellular systems. While some may hold minority limited partnership interests, such interests do not permit them to participate in the management of the cellular entity. Further, in many cases where an exchange carrier holds a minority limited partnership interest, the cellular operation does not provide service in the exchange carrier's wireline serving area. Therefore, most exchange carriers do not have preferential access to cellular spectrum to offer any radio-based service to their customers.

It is also clear that capacity, economic constraints and the embedded network architecture presently used in delivering cellular service will not permit, within the spectrum allocated for cellular, the wide range of services and price points that are necessary to meet the needs of a broad range of customers.[16]

> Although cellular operators may have sufficient capacity to provide some forms of PCS on currently allocated spectrum with CDMA [code division multiple access] technology, forcing them to do so will place

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[15] Notice at footnote 46.

[16] Letter to Commissioner Barrett from John E. DeFeo, GEN Docket No. 90-314, January 15, 1992 at p. 2.

> them at a competitive economic disadvantage with new providers. The developer of a new major market PCS network will be able to build a more efficient and lower cost network architecture than the cellular provider, whose network architecture is based on a design developed in the early 1980's, before the AT&T divestiture, access charges, and open network architectures were in place. Lower cost competition will drive down prices at a rate which may be too rapid to allow cellular operators to invest in their current network adequately to meet customer needs. Therefore, while overall price levels may be lowered, current and future cellular customers may be disadvantaged by the inability of current operators to invest in R&D, new product and service enhancements, and technological upgrades to meet these needs.[17]

As noted above, cellular and PCS are distinct offerings. In order for cellular to continue to provide analog and digital cellular service, separate frequencies must be made available for technologies better suited for PCS. In this way, the Commission can accomplish its objective to foster a diversity of services by providing for the development of innovative and unique network architectures that will provide new services priced differently from cellular and designed to meet different customer needs.

In addition, "[a] new PCS licensee -- whether a cellular licensee, telephone company, cable television operator, interexchange carrier, competitive access provider, or another new entrant -- should have a less expensive, more efficient network architecture than the cellular licensee for a service that is competitive with cellular. This will put pressure on the

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[17] Id. at p. 4.

prices charged to subscribers and thereby drive cellular prices closer to cost."[18] This will allow the Commission to achieve its goal to foster the competitive delivery of services.

IV. LICENSING ISSUES

A. MSAs and RSAs Are the Maximum Size for PCS License Areas.

The Commission included four options for comment regarding the size of PCS license areas.[19] USTA agrees with Commissioner Quello that smaller license areas are more appropriate for low-power, microcell systems which are designed to serve pedestrian users.[20] Therefore, USTA recommends that the Commission utilize the 734 cellular licensing areas, 306 Metropolitan Statistical Areas (MSAs) and 428 Rural Service Areas (RSAs), to establish the initial service areas for PCS.

The use of the cellular serving areas for PCS would enable the Commission to meet its stated objectives in establishing this new family of services. Smaller serving areas would meet the Commission's goal to encourage competition by expanding the number of providers. The smaller the service area, the less investment would be required, thus providing an opportunity for

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[18] Id. at p. 8.

[19] Notice at para. 60.

[20] Separate Statement of Commissioner James H. Quello, Re: Amendment of the Commission's Rules to Establish New Personal Communication Services, Erratum, released August 14, 1992.